

## Solitons and Waves in (2+1)-Dimensional Dispersive Long-Wave Equation

MA Zheng-Yi,<sup>1,2</sup> LIU Yu-Lu,<sup>1</sup> LU Zhi-Ming,<sup>1</sup> and ZHENG Chun-Long<sup>2</sup>

<sup>1</sup> Shanghai Institute of Applied Mathematics and Mechanics, Shanghai University, Shanghai 200072, China

<sup>2</sup> Department of Mathematics, Zhejiang Lishui University, Lishui 323000, China  
(Received: 2006-1-6; Revised: 2006-3-9)

**Abstract:** For a higher-dimensional integrable nonlinear dynamical system, there are abundant coherent soliton excitations. With the aid of an improved projective Riccati equation approach, the paper obtains several types of exact solutions to the (2+1)-dimensional dispersive long-wave equation, including multiple-soliton solutions, periodic soliton solutions, and Weierstrass function solutions. From these solutions, apart from several multisoliton excitations, we derive some novel features of wave structures by introducing some types of lower-dimensional patterns.

PACS: 02.30.Ik, 03.65.Ge, 05.45.Yv

**Key words:** (2+1)-dimensional dispersive long-wave equation, projective Riccati equation approach, soliton annihilation, traveling wave

[\[Full text: PDF\]](#)

Close